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SUPERFUND DIVISION

March 23, 2012

Mr. Jason Gunter
Remedial Project Manager
U.S. Environmental Protection Agency
Region 7 - Superfund Branch
901 North 5th Street
Kansas City, KS 66101

Re: The Doe Run Company – Elvins/Rivermines Mine Tailings Site Monthly Progress Report

Dear Mr. Gunter:

As required by Article VI, Section 56 of the Unilateral Administrative Order (UAO) (CERCLA-07-2005-0169) for the referenced project and on behalf of The Doe Run Company, the progress report for the period February 1, 2012 through February 29, 2012 is enclosed. If you have any questions or comments, please call me at 573-638-5020 or Mark Nations at 573-518-0800.

Sincerely,

A handwritten signature in black ink, appearing to read "Ty L. Morris", is written over a horizontal line.

Ty L. Morris, P.E., R.G.
Vice President

TLM/jms

Enclosures

c: Mark Nations – TDRC
Matt Wohl – TDRC (electronic only)
Kathy Rangen – MDNR
Tim Skoglund – Barr Engineering



Elvins/Rivermines Mine Tailings Site
Park Hills, Missouri
Removal Action - Monthly Progress Report
Period: February 1, 2012 – February 29, 2012

1. Actions Performed and Problems Encountered This Period:

- a. Clogging of the iron/sand media continued to occur in February, despite efforts the previous month to remedy the issue. An acid treatment that used a combination of citric and muriatic acids in combination with flushing of the ZVI/sand filter using increased head pressure occurred on February 1, 2012. This effort relieved the clogging for a short time, but the clogging issue ultimately continued. Therefore, a bypass pipe that diverts flow around the ZVI/sand filter, aeration tank, and final sand filter was activated on February 10, 2012. This bypass will be utilized until it is determined what additional actions need to be taken to address the clogging issue.
- b. Activation of the bypass on February 10, 2012 caused an approximately two-foot reduction in the water surface elevation in the roughing filter. This reduction in elevation also reduced the retention time of water within the roughing filter. An increase of the flow rate through the system (from 1.5 gallons per minute to 5.5 gallons per minute) reduced the retention time further. As a result, zinc removal rates gradually dropped from over 99% to less than 51% in a two-week period. A standpipe was added to the bypass pipe on March 1, 2012 to increase the water surface elevation and retention time of the roughing filter.
- c. Analytical sampling and field measurements continued two to three times a week for the duration of the month of January. No WET testing was performed during the period.

2. Analytical Data and Results Received This Period:

- a. The removal percentage for dissolved zinc in the effluent was generally found to exceed 99.7% between February 3, 2012 and February 10, 2012. This equated to dissolved zinc levels that ranged between 34 µg/L and 64 µg/L. However, by the end of the period, the removal percentage had gradually decreased to 50.2%. This equated to a dissolved zinc level of 10.2 mg/L.
- b. The removal percentage for total zinc in the effluent was found to range between 89.3% and 98.7% between February 3, 2012 and February 10, 2012. This equated to total zinc levels that ranged between 320 µg/L and 4.55 mg/L. However, by the end of the period, the removal percentage had gradually decreased to 44.2%. This equated to a dissolved zinc level of 13.4 mg/L.
- c. Iron concentrations in the system effluent between February 3, 2012 and February 10, 2012 ranged from 948 µg/L to 28.1 mg/L.
- d. Total suspended solids concentrations in the system effluent between February 3, 2012 and February 10, 2012 ranged from 20 mg/L to 60 mg/L.
- e. Acute WET testing was performed using samples pulled from the system effluent on January 24, 2012. The results of the testing indicate that the effluent sample from the iron/sand filter passed the acute WET test with an LC50 concentration greater than 100% effluent.
- f. During this period, water samples were collected from just upstream of Old Missouri Highway 32, as well as from upstream and downstream of the confluence of the site discharge with Flat River. The analytical results for this event are included in this progress report.

3. Developments Anticipated and Work Scheduled for Next Period:

- a. Continue analytical samples and field measurements three times a week.

- b. Continue to operate the system with the bypass pipe through the month of March.
 - c. In-field bench testing of different iron media treatment options to assess possible options for this portion of the system.
 - d. Complete monthly water sampling activities as described in the Removal Action Work Plan.
 - e. Complete air monitoring activities as described in the Removal Action Work Plan.
- 4. Changes in Personnel:**
- a. None.
- 5. Issues or Problems Arising This Period:**
- a. None.
- 6. Resolution of Issues or Problems Arising This Period:**
- a. None.

End of Monthly Progress Report

March 07, 2012

Allison Olds
Barr Engineering Company
1001 Diamond Ridge
Suite 1100
Jefferson City, MO 65109
TEL: (573) 638-5007
FAX: (573) 638-5001



RE: Rivermines MS-25/86-0009

WorkOrder: 12021052

Dear Allison Olds:

TEKLAB, INC received 4 samples on 2/24/2012 9:41:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,



Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com



Report Contents

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

This reporting package includes the following:

| | |
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Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

Abbr Definition

- CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
- DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
- DNI Did not ignite
- DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
- ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
- IDPH IL Dept. of Public Health
- LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
- LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MB Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
- MDL Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
- MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
- MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
- MW Molecular weight
- ND Not Detected at the Reporting Limit
- NELAP NELAP Accredited
- PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
- RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
- RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
- SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
- Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
- TNTC Too numerous to count (> 200 CFU)

Qualifiers

- | | |
|--|--|
| # - Unknown hydrocarbon | B - Analyte detected in associated Method Blank |
| E - Value above quantitation range | H - Holding times exceeded |
| J - Analyte detected below quantitation limits | M - Manual Integration used to determine area response |
| ND - Not Detected at the Reporting Limit | R - RPD outside accepted recovery limits |
| S - Spike Recovery outside recovery limits | X - Value exceeds Maximum Contaminant Level |

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

Cooler Receipt Temp: 1.2 °C

Sample RM-US (Lab ID 12021052-004) was initially analyzed for Total and Dissolved Zinc from Nitric Acid preserved bottles. The results were Total Zinc <10 and the Dissolved Zinc 19 ug/L. The samples were re-digested and analyzed a second time with similar results. The samples were then taken from the Unpreserved container. The Total Zinc was split and preserved with Nitric Acid and the Dissolved was filtered and then preserved with Nitric Acid. The samples were analyzed again and both results were <10 ug/L. The results from the unpreserved bottle were used for the final report. It looks as though either the bottle or the filter used in the field may have been contaminated.

Locations and Accreditations

| Collinsville | | Springfield | | Kansas City | |
|--------------|---|-------------|---|-------------|--------------------------------------|
| Address | 5445 Horseshoe Lake Road Collinsville, IL 62234-7425 | Address | 3920 Pintail Dr Springfield, IL 62711-9415 | Address | 8421 Nieman Road Lenexa, KS 66214 |
| Phone | (618) 344-1004 | Phone | (217) 698-1004 | Phone | (913) 541-1998 |
| Fax | (618) 344-1005 | Fax | (217) 698-1005 | Fax | (913) 541-1998 |
| Email | jhriley@teklabinc.com | Email | kmccelain@teklabinc.com | Email | dthompson@teklabinc.com |

| State | Dept | Cert # | NELAP | Exp Date | Lab |
|-----------|------|---------|-------|-----------|--------------|
| Illinois | IEPA | 100226 | NELAP | 1/31/2013 | Collinsville |
| Kansas | KDHE | E-10374 | NELAP | 1/31/2013 | Collinsville |
| Louisiana | LDEQ | 166493 | NELAP | 6/30/2012 | Collinsville |
| Louisiana | LDEQ | 166578 | NELAP | 6/30/2012 | Springfield |
| Arkansas | ADEQ | 88-0966 | | 3/14/2012 | Collinsville |
| Illinois | IDPH | 17584 | | 4/30/2012 | Collinsville |
| Kentucky | UST | 0073 | | 5/26/2012 | Collinsville |
| Missouri | MDNR | 00930 | | 4/13/2013 | Collinsville |
| Oklahoma | ODEQ | 9978 | | 8/31/2012 | Collinsville |



Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

Lab ID: 12021052-001

Client Sample ID: RM-001

Matrix: AQUEOUS

Collection Date: 02/23/2012 13:15

| Analyses | Certification | RL | Qual | Result | Units | DF | Date Analyzed | Batch |
|---|---------------|------|------|--------|-------|----|------------------|---------|
| EPA 600 375.2 REV 2.0 1993 (TOTAL) | | | | | | | | |
| Sulfate | NELAP | 375 | | 986 | mg/L | 5 | 02/28/2012 19:18 | R160547 |
| <i>Results of MS/MSD have less certainty because value(s) exceed upper quantitation limits.</i> | | | | | | | | |
| STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED | | | | | | | | |
| Lab pH | NELAP | 1.00 | | 7.63 | | 1 | 02/24/2012 12:00 | R160332 |
| STANDARD METHODS 18TH ED. 2340 C | | | | | | | | |
| Hardness, as (CaCO ₃) | NELAP | 5 | | 1200 | mg/L | 1 | 02/24/2012 14:25 | R160324 |
| STANDARD METHODS 18TH ED. 2540 D | | | | | | | | |
| Total Suspended Solids | NELAP | 6 | | < 6 | mg/L | 1 | 02/27/2012 9:10 | R160430 |
| STANDARD METHODS 18TH ED. 2540 F | | | | | | | | |
| Solids, Settleable | NELAP | 0.1 | | < 0.1 | ml/L | 1 | 02/24/2012 11:51 | R160354 |
| STANDARD METHODS 18TH ED. 5310 C, ORGANIC CARBON | | | | | | | | |
| Total Organic Carbon (TOC) | NELAP | 1.0 | | 1.1 | mg/L | 1 | 02/24/2012 17:56 | R160383 |
| EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | 14.3 | µg/L | 1 | 02/25/2012 0:48 | 75468 |
| Zinc | NELAP | 10.0 | | 13600 | µg/L | 1 | 02/25/2012 0:48 | 75468 |
| EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | 16.2 | µg/L | 1 | 02/27/2012 11:50 | 75482 |
| Zinc | NELAP | 10.0 | | 13500 | µg/L | 1 | 02/27/2012 11:50 | 75482 |
| STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED) | | | | | | | | |
| Lead | NELAP | 2.00 | X | 12.3 | µg/L | 1 | 02/28/2012 11:16 | 75467 |
| STANDARD METHODS 18TH ED. 3030 E, 3113 B, METALS BY GFAA | | | | | | | | |
| Lead | NELAP | 2.00 | X | 17.1 | µg/L | 1 | 02/27/2012 15:07 | 75447 |

Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

Lab ID: 12021052-002

Client Sample ID: RM-Dup

Matrix: AQUEOUS

Collection Date: 02/23/2012 13:25

| Analyses | Certification | RL | Qual | Result | Units | DF | Date Analyzed | Batch |
|---|---------------|------|------|--------|-------|----|------------------|---------|
| EPA 600 375.2 REV 2.0 1993 (TOTAL) | | | | | | | | |
| Sulfate | NELAP | 200 | | 954 | mg/L | 20 | 03/01/2012 11:50 | R160637 |
| STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED | | | | | | | | |
| Lab pH | NELAP | 1.00 | | 7.64 | | 1 | 02/24/2012 12:02 | R160332 |
| STANDARD METHODS 18TH ED. 2340 C | | | | | | | | |
| Hardness, as (CaCO ₃) | NELAP | 5 | | 1200 | mg/L | 1 | 02/24/2012 14:25 | R160324 |
| STANDARD METHODS 18TH ED. 2540 D | | | | | | | | |
| Total Suspended Solids | NELAP | 6 | | < 6 | mg/L | 1 | 02/27/2012 9:10 | R160430 |
| STANDARD METHODS 18TH ED. 2540 F | | | | | | | | |
| Solids, Settleable | NELAP | 0.1 | | < 0.1 | ml/L | 1 | 02/24/2012 11:51 | R160354 |
| STANDARD METHODS 18TH ED. 5310 C, ORGANIC CARBON | | | | | | | | |
| Total Organic Carbon (TOC) | NELAP | 1.0 | | 1.2 | mg/L | 1 | 02/24/2012 18:02 | R160383 |
| EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | 14.3 | µg/L | 1 | 02/25/2012 1:04 | 75468 |
| Zinc | NELAP | 10.0 | | 13400 | µg/L | 1 | 02/25/2012 1:04 | 75468 |
| EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | 16.2 | µg/L | 1 | 02/27/2012 11:56 | 75482 |
| Zinc | NELAP | 10.0 | | 14000 | µg/L | 1 | 02/27/2012 11:56 | 75482 |
| STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED) | | | | | | | | |
| Lead | NELAP | 2.00 | X | 12.2 | µg/L | 1 | 02/28/2012 11:19 | 75467 |
| STANDARD METHODS 18TH ED. 3030 E, 3113 B, METALS BY GFAA | | | | | | | | |
| Lead | NELAP | 2.00 | X | 16.3 | µg/L | 1 | 02/27/2012 15:17 | 75447 |



Laboratory Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

Lab ID: 12021052-003

Client Sample ID: RM-DS

Matrix: AQUEOUS

Collection Date: 02/23/2012 14:00

| Analyses | Certification | RL | Qual | Result | Units | DF | Date Analyzed | Batch |
|---|---------------|------|------|--------|-------|----|------------------|---------|
| EPA 600 375.2 REV 2.0 1993 (TOTAL) | | | | | | | | |
| Sulfate | NELAP | 20 | | 88 | mg/L | 2 | 02/29/2012 18:10 | R160599 |
| STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED | | | | | | | | |
| Lab pH | NELAP | 1.00 | | 8.38 | | 1 | 02/24/2012 12:04 | R160332 |
| STANDARD METHODS 18TH ED. 2340 C | | | | | | | | |
| Hardness, as (CaCO ₃) | NELAP | 5 | | 240 | mg/L | 1 | 02/24/2012 14:25 | R160324 |
| STANDARD METHODS 18TH ED. 2540 D | | | | | | | | |
| Total Suspended Solids | NELAP | 6 | | < 6 | mg/L | 1 | 02/27/2012 9:10 | R160430 |
| STANDARD METHODS 18TH ED. 5310 C, ORGANIC CARBON | | | | | | | | |
| Total Organic Carbon (TOC) | NELAP | 1.0 | | 2.0 | mg/L | 1 | 02/24/2012 18:09 | R160383 |
| EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | < 2.00 | µg/L | 1 | 02/25/2012 1:09 | 75468 |
| Zinc | NELAP | 10.0 | | 417 | µg/L | 1 | 02/25/2012 1:09 | 75468 |
| EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | < 2.00 | µg/L | 1 | 02/27/2012 12:02 | 75482 |
| Zinc | NELAP | 10.0 | | 468 | µg/L | 1 | 02/27/2012 12:02 | 75482 |
| STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED) | | | | | | | | |
| Lead | NELAP | 2.00 | | < 2.00 | µg/L | 1 | 02/28/2012 11:29 | 75467 |
| STANDARD METHODS 18TH ED. 3030 E, 3113 B, METALS BY GFAA | | | | | | | | |
| Lead | NELAP | 2.00 | | 3.03 | µg/L | 1 | 02/27/2012 15:21 | 75447 |

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

Lab ID: 12021052-004

Client Sample ID: RM-US

Matrix: AQUEOUS

Collection Date: 02/23/2012 13:00

| Analyses | Certification | RL | Qual | Result | Units | DF | Date Analyzed | Batch |
|--|---------------|------|------|--------|-------|----|------------------|---------|
| EPA 600 375.2 REV 2.0 1993 (TOTAL) | | | | | | | | |
| Sulfate | NELAP | 20 | | 34 | mg/L | 2 | 02/29/2012 18:13 | R160599 |
| STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED | | | | | | | | |
| Lab pH | NELAP | 1.00 | | 8.60 | | 1 | 02/24/2012 12:07 | R160332 |
| STANDARD METHODS 18TH ED. 2340 C | | | | | | | | |
| Hardness, as (CaCO ₃) | NELAP | 5 | | 200 | mg/L | 1 | 02/24/2012 14:25 | R160324 |
| STANDARD METHODS 18TH ED. 2540 D | | | | | | | | |
| Total Suspended Solids | NELAP | 6 | R | 7 | mg/L | 1 | 02/27/2012 9:11 | R160430 |
| <i>% RPD was outside the QC limits due to low level results. When duplicate results for TSS are 20 mg/L or less and have a difference of no greater than the PQL, the results are considered within the precision of the test method and are reportable.</i> | | | | | | | | |
| STANDARD METHODS 18TH ED. 5310 C, ORGANIC CARBON | | | | | | | | |
| Total Organic Carbon (TOC) | NELAP | 1.0 | | 2.1 | mg/L | 1 | 02/24/2012 18:15 | R160383 |
| EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | < 2.00 | µg/L | 1 | 02/25/2012 1:26 | 75468 |
| Zinc | NELAP | 10.0 | | < 10.0 | µg/L | 1 | 03/06/2012 9:08 | 75747 |
| EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL) | | | | | | | | |
| Cadmium | NELAP | 2.00 | | < 2.00 | µg/L | 1 | 02/27/2012 12:08 | 75482 |
| Zinc | NELAP | 10.0 | | < 10.0 | µg/L | 1 | 03/06/2012 9:34 | 75746 |
| STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED) | | | | | | | | |
| Lead | NELAP | 2.00 | | < 2.00 | µg/L | 1 | 02/28/2012 11:33 | 75467 |
| STANDARD METHODS 18TH ED. 3030 E, 3113 B, METALS BY GFAA | | | | | | | | |
| Lead | NELAP | 2.00 | | < 2.00 | µg/L | 1 | 02/27/2012 15:31 | 75447 |



Sample Summary

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

| Lab Sample ID | Client Sample ID | Matrix | Fractions | Collection Date |
|---------------|------------------|---------|-----------|------------------|
| 12021052-001 | RM-001 | Aqueous | 5 | 02/23/2012 13:15 |
| 12021052-002 | RM-Dup | Aqueous | 5 | 02/23/2012 13:25 |
| 12021052-003 | RM-DS | Aqueous | 5 | 02/23/2012 14:00 |
| 12021052-004 | RM-US | Aqueous | 7 | 02/23/2012 13:00 |



Dates Report

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

| Sample ID | Client Sample ID Test Name | Collection Date | Received Date Prep Date/Time | Analysis Date/Time |
|---------------|--|------------------|--|---|
| 12021052-001A | RM-001 Standard Methods 18th Ed. 2540 F | 02/23/2012 13:15 | 2/24/2012 9:41:00 AM | 02/24/2012 11:51 |
| 12021052-001B | RM-001 EPA 600 375.2 Rev 2.0 1993 (Total) Standard Method 18th Ed. 4500-H B, Laboratory Analyzed Standard Methods 18th Ed. 2340 C Standard Methods 18th Ed. 2540 D | 02/23/2012 13:15 | 2/24/2012 9:41:00 AM | 02/28/2012 19:18 02/24/2012 12:00 02/24/2012 14:25 02/27/2012 9:10 |
| 12021052-001C | RM-001 EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total) Standard Methods 18th Ed. 3030 E, 3113 B, Metals by GFAA | 02/23/2012 13:15 | 2/24/2012 9:41:00 AM 02/24/2012 17:41 02/24/2012 11:03 | 02/27/2012 11:50 02/27/2012 15:07 |
| 12021052-001D | RM-001 EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved) Standard Methods 18th Ed. 3030 B, 3113 B, Metals by GFAA (Dissolved) | 02/23/2012 13:15 | 2/24/2012 9:41:00 AM 02/24/2012 13:24 02/24/2012 13:23 | 02/25/2012 0:48 02/28/2012 11:16 |
| 12021052-001E | RM-001 Standard Methods 18th Ed. 5310 C, Organic Carbon | 02/23/2012 13:15 | 2/24/2012 9:41:00 AM | 02/24/2012 17:56 |
| 12021052-002A | RM-Dup Standard Methods 18th Ed. 2540 F | 02/23/2012 13:25 | 2/24/2012 9:41:00 AM | 02/24/2012 11:51 |
| 12021052-002B | RM-Dup EPA 600 375.2 Rev 2.0 1993 (Total) Standard Method 18th Ed. 4500-H B, Laboratory Analyzed Standard Methods 18th Ed. 2340 C Standard Methods 18th Ed. 2540 D | 02/23/2012 13:25 | 2/24/2012 9:41:00 AM | 03/01/2012 11:50 02/24/2012 12:02 02/24/2012 14:25 02/27/2012 9:10 |
| 12021052-002C | RM-Dup EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total) Standard Methods 18th Ed. 3030 E, 3113 B, Metals by GFAA | 02/23/2012 13:25 | 2/24/2012 9:41:00 AM 02/24/2012 17:41 02/24/2012 11:03 | 02/27/2012 11:56 02/27/2012 15:17 |
| 12021052-002D | RM-Dup EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved) Standard Methods 18th Ed. 3030 B, 3113 B, Metals by GFAA (Dissolved) | 02/23/2012 13:25 | 2/24/2012 9:41:00 AM 02/24/2012 13:24 02/24/2012 13:23 | 02/25/2012 1:04 02/28/2012 11:19 |
| 12021052-002E | RM-Dup Standard Methods 18th Ed. 5310 C, Organic Carbon | 02/23/2012 13:25 | 2/24/2012 9:41:00 AM | 02/24/2012 18:02 |
| 12021052-003A | RM-DS Standard Method 18th Ed. 4500-H B, Laboratory Analyzed Standard Methods 18th Ed. 2540 D | 02/23/2012 14:00 | 2/24/2012 9:41:00 AM | 02/24/2012 12:04 02/27/2012 9:10 |
| 12021052-003B | RM-DS EPA 600 375.2 Rev 2.0 1993 (Total) Standard Methods 18th Ed. 2340 C | 02/23/2012 14:00 | 2/24/2012 9:41:00 AM | 02/29/2012 18:10 02/24/2012 14:25 |



Dates Report

<http://www.teklabinco.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

| Sample ID | Client Sample ID Test Name | Collection Date | Received Date Prep Date/Time | Analysis Date/Time |
|---------------|--|------------------|--|--------------------------------------|
| 12021052-003C | RM-DS EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total) Standard Methods 18th Ed. 3030 E, 3113 B, Metals by GFAA | 02/23/2012 14:00 | 2/24/2012 9:41:00 AM 02/24/2012 17:41 02/24/2012 11:03 | 02/27/2012 12:02 02/27/2012 15:21 |
| 12021052-003D | RM-DS EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved) Standard Methods 18th Ed. 3030 B, 3113 B, Metals by GFAA (Dissolved) | 02/23/2012 14:00 | 2/24/2012 9:41:00 AM 02/24/2012 13:24 02/24/2012 13:23 | 02/25/2012 1:09 02/28/2012 11:29 |
| 12021052-003E | RM-DS Standard Methods 18th Ed. 5310 C, Organic Carbon | 02/23/2012 14:00 | 2/24/2012 9:41:00 AM | 02/24/2012 18:09 |
| 12021052-004A | RM-US Standard Method 18th Ed. 4500-H B, Laboratory Analyzed Standard Methods 18th Ed. 2540 D | 02/23/2012 13:00 | 2/24/2012 9:41:00 AM | 02/24/2012 12:07 02/27/2012 9:11 |
| 12021052-004B | RM-US EPA 600 375.2 Rev 2.0 1993 (Total) Standard Methods 18th Ed. 2340 C | 02/23/2012 13:00 | 2/24/2012 9:41:00 AM | 02/29/2012 18:13 02/24/2012 14:25 |
| 12021052-004C | RM-US EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total) Standard Methods 18th Ed. 3030 E, 3113 B, Metals by GFAA | 02/23/2012 13:00 | 2/24/2012 9:41:00 AM 02/24/2012 17:41 02/24/2012 11:03 | 02/27/2012 12:08 02/27/2012 15:31 |
| 12021052-004D | RM-US EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved) Standard Methods 18th Ed. 3030 B, 3113 B, Metals by GFAA (Dissolved) | 02/23/2012 13:00 | 2/24/2012 9:41:00 AM 02/24/2012 13:24 02/24/2012 13:23 | 02/25/2012 1:26 02/28/2012 11:33 |
| 12021052-004E | RM-US Standard Methods 18th Ed. 5310 C, Organic Carbon | 02/23/2012 13:00 | 2/24/2012 9:41:00 AM | 02/24/2012 18:15 |
| 12021052-004F | RM-US EPA 600 4.1.4, 200.7R4.4, Metals by ICP (Total) | 02/23/2012 13:00 | 2/24/2012 9:41:00 AM 03/05/2012 17:00 | 03/06/2012 9:34 |
| 12021052-004G | RM-US EPA 600 4.1.1, 200.7R4.4, Metals by ICP (Dissolved) | 02/23/2012 13:00 | 2/24/2012 9:41:00 AM 03/05/2012 17:54 | 03/06/2012 9:08 |

Quality Control Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company
 Client Project: Rivermines MS-25/86-0009

Work Order: 12021052
 Report Date: 07-Mar-12

EPA 600 375.2 REV 2.0 1993 (TOTAL)

| | | | | | | | | | | |
|---------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch R160547 | | SampType: MBLK | | Units mg/L | | | | | | |
| SampID: MBLK | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Sulfate | | 75 | | < 75 | | | | | | 02/29/2012 |
| | | | | | | | | | | |

| | | | | | | | | | | | |
|------------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|------------|------|
| Batch R160547 | | SampType: MBLK | | Units mg/L | | | | | | | |
| SampID: ICB/MBLK | | | | | | | | | | | Date |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Analyzed | |
| Sulfate | | 75 | | < 75 | | | | | | 02/28/2012 | |

| | | | | | | | | | | |
|---------------|--|---------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch R160547 | | SampType: LCS | | Units mg/L | | | | | | |
| SampID: LCS | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Sulfate | | 75 | | 139 | 150 | 0 | 92.7 | 90 | 110 | 02/29/2012 |
| | | | | | | | | | | |

| | | | | | | | | | | |
|---------------|--|---------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch R160547 | | SampType: LCS | | Units mg/L | | | | | | |
| SampID: LCS | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Sulfate | | 75 | | 139 | 150 | 0 | 92.9 | 90 | 110 | 02/28/2012 |
| | | | | | | | | | | |

| | | | | | | | | | | |
|--------------------------|-----|--------------|--------|------------|-------------|------|-----------|------------|------------|---------------|
| Batch R160547 | | SampType: MS | | Units mg/L | | | | | | |
| SampID: 12021052-001B MS | | | | | | | | | | Date Analyzed |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Sulfate | 375 | E | 1540 | 0 | 986.5 | 0 | 85 | 115 | 02/28/2012 | |

| | | | | | | | | | | |
|---------------------------|--|---------------|------|------------|-------|-------------|------|--------------|------|---------------|
| Batch R160547 | | SampType: MSD | | Units mg/L | | | | RPD Limit 10 | | |
| SampID: 12021052-001B MSD | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | Date Analyzed |
| Sulfate | | 375 | E | 1590 | 0 | 986.5 | 0 | 1539 | 2.95 | 02/28/2012 |

| | | | | | | | | | | | |
|------------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|------------|---------------|
| Batch R160599 | | SampType: MBLK | | Units mg/L | | | | | | | |
| SampID: ICB/MBLK | | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Sulfate | | 10 | | < 10 | | | | | | 02/29/2012 | |
| | | | | | | | | | | | |

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|-----------------|----|---------------|--------|------------|-------------|-------|-----------|------------|---------------|--|
| Batch R160599 | | SampType: LCS | | Units mg/L | | | | | | |
| SampID: ICB/LCS | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed | |
| Sulfate | 10 | | 20 | 20 | 0 | 101.3 | 90 | 110 | 02/29/2012 | |
| | | | | | | | | | | |

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|------------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|------------|---------------|
| Batch R160637 | | SampType: MBLK | | Units mg/L | | | | | | | |
| SampID: ICB/MBLK | | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Sulfate | | 10 | | < 10 | | | | | | 03/01/2012 | |
| | | | | | | | | | | | |

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

EPA 600 375.2 REV 2.0 1993 (TOTAL)

| | | | | | | | | | | |
|-----------------|--|---------------|------|------------|-------|-------------|------|-----------|------------|------------|
| Batch R160637 | | SampType: LCS | | Units mg/L | | | | | | |
| SampID: ICV/LCS | | | | | | | | | | Date |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Analyzed |
| Sulfate | | 10 | | 20 | 20 | 0 | 98.0 | 90 | 110 | 03/01/2012 |

STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED

| | | | | | | | | | | |
|---------------|--|---------------|------|--------|-------|-------------|------|-----------|------------|---------------|
| Batch R160332 | | SampType: LCS | | Units | | | | | | |
| SampID: LCS | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Lab pH | | 1.00 | | 6.98 | 7.00 | 0 | 99.7 | 99.1 | 100.8 | 02/24/2012 |

| | | | | | | | | | | |
|--------------------------|--|---------------|------|--------|-------|-------------|------|--------------|------|---------------|
| Batch R160332 | | SampType: DUP | | Units | | | | RPD Limit 10 | | |
| SampID: 12021052-001BDUP | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | |
| Lab pH | | 1.00 | | 7.66 | | | | 7.630 | 0.39 | 02/24/2012 |

| | | | | | | | | | | |
|--------------------------|--|---------------|------|--------|-------|-------------|------|--------------|------|---------------|
| Batch R160332 | | SampType: DUP | | Units | | | | RPD Limit 10 | | |
| SampID: 12021052-002BDUP | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | |
| Lab pH | | 1.00 | | 7.66 | | | | 7.640 | 0.26 | 02/24/2012 |

| | | | | | | | | | | | |
|--------------------------|--|---------------|------|--------|-------|-------------|------|--------------|------|------------|---------------|
| Batch R160332 | | SampType: DUP | | Units | | | | RPD Limit 10 | | | |
| SampID: 12021052-003ADUP | | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | | |
| Lab pH | | 1.00 | | 8.38 | | | | 8.380 | 0.00 | 02/24/2012 | |

| | | | | | | | | | | | |
|--------------------------|--|---------------|------|--------|-------|-------------|------|--------------|------|------------|---------------|
| Batch R160332 | | SampType: DUP | | Units | | | | RPD Limit 10 | | | |
| SampID: 12021052-004ADUP | | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | | |
| Lab pH | | 1.00 | | 8.60 | | | | 8.600 | 0.00 | 02/24/2012 | |

STANDARD METHODS 18TH ED. 2340 C

| | | | | | | | | | | |
|------------------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch R160324 | | SampType: MBLK | | Units mg/L | | | | | | |
| SampID: MB-R160324 | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Hardness, as (CaCO3) | | 5 | | < 5 | | | | | | 02/24/2012 |

| | | | | | | | | | | |
|------------------------|--|---------------|------|------------|-------|-------------|-------|-----------|------------|------------|
| Batch R160324 | | SampType: LCS | | Units mg/L | | | | | | |
| SampID: LCS-R160324 | | | | | | | | | | Date |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Analyzed |
| Hardness, as (CaCO3) | | 5 | | 1000 | 1000 | 0 | 100.0 | 90 | 110 | 02/24/2012 |

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

STANDARD METHODS 18TH ED. 2340 C

| | | | | | | | | | | |
|-------------------------|--|--------------|------|------------|-------|-------------|-------|-----------|------------|---------------|
| Batch R160324 | | SampType: MS | | Units mg/L | | | | | | |
| SampID: 12021052-003BMS | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | |
| Hardness, as (CaCO3) | | 5 | | 640 | 400 | 240.0 | 100.0 | 85 | 115 | 02/24/2012 |

| | | | | | | | | | | |
|--------------------------|--|---------------|------|------------|-------|-------------|-------|--------------|------|---------------|
| Batch R160324 | | SampType: MSD | | Units mg/L | | | | RPD Limit 10 | | |
| SampID: 12021052-003BMSD | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | |
| Hardness, as (CaCO3) | | 5 | | 640 | 400 | 240.0 | 100.0 | 640.0 | 0.00 | 02/24/2012 |

STANDARD METHODS 18TH ED. 2540 D

| | | | | | | | | | | |
|------------------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch R160430 | | SampType: MBLK | | Units mg/L | | | | | | |
| SampID: MBLK | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Total Suspended Solids | | 6 | | < 6 | | | | | | 02/27/2012 |

| | | | | | | | | | | |
|------------------------|----|---------------|--------|------------|-------------|------|-----------|------------|------------|------|
| Batch R160430 | | SampType: LCS | | Units mg/L | | | | | | |
| SampID: LCS | | | | | | | | | | Date |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Analyzed | |
| Total Suspended Solids | 6 | | 94 | 100 | 0 | 94.0 | 85 | 115 | 02/27/2012 | |
| Total Suspended Solids | 6 | | 92 | 100 | 0 | 92.0 | 85 | 115 | 02/27/2012 | |
| Total Suspended Solids | 6 | | 95 | 100 | 0 | 95.0 | 85 | 115 | 02/27/2012 | |

| | | | | | | | | | | |
|---------------------------|--|---------------|------|------------|-------|-------------|------|--------------|-------|---------------|
| Batch R160430 | | SampType: DUP | | Units mg/L | | | | RPD Limit 15 | | |
| SampID: 12021052-004A DUP | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | |
| Total Suspended Solids | | 6 | R | 6 | | | | 7.000 | 15.38 | 02/27/2012 |

STANDARD METHODS 18TH ED. 5310 C, ORGANIC CARBON

| | | | | | | | | | | |
|----------------------------|-----|----------------|--------|------------|-------------|------|-----------|------------|------------|---------------|
| Batch R160383 | | SampType: MBLK | | Units mg/L | | | | | | |
| SampID: ICB/MBLK | | | | | | | | | | Date Analyzed |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Total Organic Carbon (TOC) | 1.0 | | < 1.0 | | | | | | 02/24/2012 | |

| | | | | | | | | | | |
|----------------------------|-----|---------------|--------|------------|-------------|-------|-----------|------------|---------------|--|
| Batch R160383 | | SampType: LCS | | Units mg/L | | | | | | |
| SampID: ICV/LCS | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed | |
| Total Organic Carbon (TOC) | 5.0 | | 48.6 | 48.2 | 0 | 100.8 | 89.6 | 109.5 | 02/24/2012 | |

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

| Batch 75468 | | SampType: MBLK | | Units µg/L | | | | | | |
|------------------|------|----------------|--------|------------|-------------|------|-----------|------------|------------|------|
| SampID: MB-75468 | | | | | | | | | | Date |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Analyzed | |
| Cadmium | 2.00 | | < 2.00 | 2.00 | 0 | 0 | -100 | 100 | 02/25/2012 | |
| Cadmium | 2.00 | | < 2.00 | 2.00 | 0 | 0 | -100 | 100 | 02/25/2012 | |
| Zinc | 10.0 | | < 10.0 | 10.0 | 0 | 0 | -100 | 100 | 02/25/2012 | |
| Zinc | 10.0 | | < 10.0 | 10.0 | 0 | 21.0 | -100 | 100 | 02/25/2012 | |

| Batch 75468 | | SampType: LCS | | Units µg/L | | | | | | |
|-------------------|------|---------------|--------|------------|-------------|-------|-----------|------------|---------------|--|
| SampID: LCS-75468 | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed | |
| Cadmium | 2.00 | | 48.6 | 50.0 | 0 | 97.2 | 85 | 115 | 02/25/2012 | |
| Cadmium | 2.00 | | 47.6 | 50.0 | 0 | 95.2 | 85 | 115 | 02/28/2012 | |
| Zinc | 10.0 | | 468 | 500 | 0 | 93.5 | 85 | 115 | 02/25/2012 | |
| Zinc | 10.0 | | 504 | 500 | 0 | 100.8 | 85 | 115 | 02/25/2012 | |

| Batch 75468 | | SampType: MS | | Units µg/L | | | | | | Date Analyzed |
|-------------------------|------|--------------|--------|------------|-------------|------|-----------|------------|------------|---------------|
| SampID: 12021052-003DMS | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Cadmium | 2.00 | | 41.2 | 50.0 | 0.7 | 81.0 | 75 | 125 | 02/25/2012 | |
| Zinc | 10.0 | | 868 | 500 | 417 | 90.3 | 75 | 125 | 02/25/2012 | |

| Batch 75468 | | SampType: MSD | | Units µg/L | | | | RPD Limit 20 | | |
|--------------------------|------|---------------|--------|------------|-------------|------|-------------|--------------|---------------|--|
| SampID: 12021052-003DMSD | | | | | | | | | Date Analyzed | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | | |
| Cadmium | 2.00 | | 41.4 | 50.0 | 0.7 | 81.4 | 41.2 | 0.48 | 02/25/2012 | |
| Zinc | 10.0 | | 869 | 500 | 417 | 90.4 | 868.3 | 0.10 | 02/25/2012 | |

| | | | | | | | | | | |
|------------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch 75747 | | SampType: MBLK | | Units µg/L | | | | | | |
| SampID: MB-75747 | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Zinc | | 10.0 | | < 10.0 | 10.0 | 0 | 38.0 | -100 | 100 | 03/06/2012 |

| Batch 75747 | | SampType: LCS | | Units µg/L | | | | | | | |
|-------------------|--|---------------|------|------------|-------|-------------|------|-----------|------------|------------|---------------|
| SampID: LCS-75747 | | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Zinc | | 10.0 | | 493 | 500 | 0 | 98.5 | 85 | 115 | 03/06/2012 | |

| | | | | | | | | | | |
|-------------------------|--|--------------|------|------------|-------|-------------|------|-----------|------------|------------|
| Batch 75747 | | SampType: MS | | Units µg/L | | | | | | |
| SampID: 12021052-004GMS | | | | | | | | | | Date |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Analyzed |
| Zinc | | 10.0 | | 485 | 500 | 0 | 97.1 | 75 | 125 | 03/06/2012 |

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

EPA 600 4.1.1, 200.7R4.4, METALS BY ICP (DISSOLVED)

| Batch 75747 | | SampType: MSD | | Units µg/L | | RPD Limit 20 | | | | Date Analyzed |
|--------------------------|------|---------------|--------|------------|-------------|--------------|-------------|------|------------|---------------|
| SampID: 12021052-004GMSD | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | | |
| Zinc | 10.0 | | 492 | 500 | 0 | 98.5 | 485.3 | 1.43 | 03/06/2012 | |

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

| Batch 75482 | | SampType: MBLK | | Units µg/L | | | | | | Date Analyzed |
|------------------|------|----------------|--------|------------|-------------|------|-----------|------------|------------|---------------|
| SampID: MB-75482 | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Cadmium | 2.00 | | < 2.00 | 2.00 | 0 | 0 | -100 | 100 | 02/27/2012 | |
| Zinc | 10.0 | | < 10.0 | 10.0 | 0 | 0 | -100 | 100 | 02/27/2012 | |

| Batch 75482 | | SampType: LCS | | Units µg/L | | | | | | Date Analyzed |
|-------------------|------|---------------|--------|------------|-------------|-------|-----------|------------|------------|---------------|
| SampID: LCS-75482 | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Cadmium | 2.00 | | 50.5 | 50.0 | 0 | 101.0 | 85 | 115 | 02/27/2012 | |
| Zinc | 10.0 | | 518 | 500 | 0 | 103.7 | 85 | 115 | 02/27/2012 | |

| Batch 75482 | | SampType: MS | | Units µg/L | | | | | | Date Analyzed |
|-------------------------|------|--------------|--------|------------|-------------|------|-----------|------------|------------|---------------|
| SampID: 12021052-004CMS | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Cadmium | 2.00 | | 49.0 | 50.0 | 0 | 98.0 | 75 | 125 | 02/27/2012 | |

| Batch 75482 | | SampType: MSD | | Units µg/L | | RPD Limit 20 | | | | Date Analyzed |
|--------------------------|------|---------------|--------|------------|-------------|--------------|-------------|------|------------|---------------|
| SampID: 12021052-004CMSD | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | | |
| Cadmium | 2.00 | | 50.3 | 50.0 | 0 | 100.6 | 49 | 2.62 | 02/27/2012 | |

| Batch 75746 | | SampType: MBLK | | Units µg/L | | | | | | Date Analyzed |
|------------------|------|----------------|--------|------------|-------------|------|-----------|------------|------------|---------------|
| SampID: MB-75746 | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Cadmium | 2.00 | | < 2.00 | 2.00 | 0 | 0 | -100 | 100 | 03/06/2012 | |
| Zinc | 10.0 | | < 10.0 | 10.0 | 0 | 0 | -100 | 100 | 03/06/2012 | |

| Batch 75746 | | SampType: LCS | | Units µg/L | | | | | | Date Analyzed |
|-------------------|------|---------------|--------|------------|-------------|-------|-----------|------------|------------|---------------|
| SampID: LCS-75746 | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Cadmium | 2.00 | | 49.4 | 50.0 | 0 | 98.8 | 85 | 115 | 03/06/2012 | |
| Zinc | 10.0 | | 530 | 500 | 0 | 106.0 | 85 | 115 | 03/06/2012 | |

| Batch 75746 | | SampType: MS | | Units µg/L | | | | | | Date Analyzed |
|-------------------------|------|--------------|--------|------------|-------------|-------|-----------|------------|------------|---------------|
| SampID: 12021052-004FMS | | | | | | | | | | |
| Analyses | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Zinc | 10.0 | | 532 | 500 | 3.2 | 105.8 | 75 | 125 | 03/06/2012 | |



Quality Control Results

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)

| Batch 75746 | | SampType: MSD | | Units µg/L | | | | RPD Limit 20 | | |
|--------------------------|--|---------------|------|------------|-------|-------------|-------|--------------|------|---------------|
| SampID: 12021052-004FMSD | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | |
| Zinc | | 10.0 | | 534 | 500 | 3.2 | 106.1 | 532.1 | 0.26 | 03/06/2012 |

STANDARD METHODS 18TH ED. 3030 B, 3113 B, METALS BY GFAA (DISSOLVED)

| | | | | | | | | | | |
|------------------|--|----------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch 75467 | | SampType: MBLK | | Units µg/L | | | | | | |
| SampID: MB-75467 | | | | | | | | | | |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | Date Analyzed |
| Lead | | 2.00 | | < 2.00 | 2.00 | 0 | 0 | -100 | 100 | 02/28/2012 |

| | | | | | | | | | | | |
|-------------------|--|---------------|------|------------|-------|-------------|------|-----------|------------|------------|---------------|
| Batch 75467 | | SampType: LCS | | Units µg/L | | | | | | | |
| SampID: LCS-75467 | | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Lead | | 2.00 | | 14.2 | 15.0 | 0 | 94.4 | 85 | 115 | 02/28/2012 | |

| | | | | | | | | | | |
|-------------------------|--|--------------|------|------------|-------|-------------|------|-----------|------------|---------------|
| Batch 75467 | | SampType: MS | | Units µg/L | | | | | | |
| SampID: 12021052-002DMS | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | |
| Lead | | 2.00 | | 26.3 | 15.0 | 12.195 | 93.8 | 70 | 130 | 02/28/2012 |

| Batch 75467 | | SampType: MSD | | Units µg/L | | | | RPD Limit 20 | | |
|--------------------------|--|---------------|------|------------|-------|-------------|------|--------------|------|---------------|
| SampID: 12021052-002DMSD | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | |
| Lead | | 2.00 | | 24.9 | 15.0 | 12.195 | 84.4 | 26.2713 | 5.55 | 02/28/2012 |

STANDARD METHODS 18TH ED. 3030 E, 3113 B, METALS BY GFAA

| | | | | | | | | | | | |
|-------------------------|--|--------------|------|------------|-------|-------------|------|-----------|------------|------------|---------------|
| Batch 75447 | | SampType: MS | | Units µg/L | | | | | | | |
| SampID: 12021052-001CMS | | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | Low Limit | High Limit | | |
| Lead | | 2.00 | | 31.5 | 15.0 | 17.1174 | 96.0 | 70 | 130 | 02/27/2012 | |

| Batch 75447 | | SampType: MSD | | Units µg/L | | | | RPD Limit 20 | | |
|--------------------------|--|---------------|------|------------|-------|-------------|------|--------------|------|---------------|
| SampID: 12021052-001CMSD | | | | | | | | | | Date Analyzed |
| Analyses | | RL | Qual | Result | Spike | SPK Ref Val | %REC | RPD Ref Val | %RPD | |
| Lead | | 2.00 | | 31.3 | 15.0 | 17.1174 | 94.8 | 31.5152 | 0.59 | 02/27/2012 |



Receiving Check List

<http://www.teklabinc.com/>

Client: Barr Engineering Company

Work Order: 12021052

Client Project: Rivermines MS-25/86-0009

Report Date: 07-Mar-12

Carrier: Rick Schmidt

Received By: EAH

Completed by:

On:

24-Feb-12

Timothy W. Mathis

Reviewed by:

On:

24-Feb-12

Elizabeth A. Hurley

Elizabeth A. Hurley

Pages to follow: Chain of custody

1

Extra pages included

0

Shipping container/cooler in good condition?

Yes ☒

No ☐

Not Present ☐

Temp °C 1.2

Type of thermal preservation?

None ☐

Ice ☒

Blue Ice ☐

Dry Ice ☐

Chain of custody present?

Yes ☒

No ☐

Chain of custody signed when relinquished and received?

Yes ☒

No ☐

Chain of custody agrees with sample labels?

Yes ☒

No ☐

Samples in proper container/bottle?

Yes ☒

No ☐

Sample containers intact?

Yes ☒

No ☐

Sufficient sample volume for indicated test?

Yes ☒

No ☐

All samples received within holding time?

Yes ☒

No ☐

Reported field parameters measured:

Field ☐

Lab ☒

NA ☐

Container/Temp Blank temperature in compliance?

Yes ☒

No ☐

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water - at least one vial per sample has zero headspace?

Yes ☐

No ☐

No VOA vials ☒

Water - TOX containers have zero headspace?

Yes ☐

No ☐

No TOX containers ☒

Water - pH acceptable upon receipt?

Yes ☒

No ☐

Any No responses must be detailed below or on the COC.

Custody seal(s) intact on shipping container/cooler. RS 2/24/12



Teklab Chain of Custody

Pg. 1 of 1

Workorder 12021052

5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618)344-1004 ~ Fax: (618)344-1005

| | | |
|--------------------------------|----|-------|
| Barr Engineering Co. | | |
| 1001 Diamond Ridge, Suite 1100 | | |
| Jefferson City | MO | 65109 |
| Rivermines MS - 25/86-0009 | | |

Are the samples chilled? ☒ Yes ☐ No with: ☒ Ice ☐ Blue icePreserved in ☒ Lab ☐ FieldCooler Temp 12 Sampler Chris SchulteTeklab, Inc.
Counter Pick UpTH
2-24-12

Comments

Invoice to Mark Nations. Results to Allison Olds and Mark Nations, mnations@doerun.com
Matrix is surface water. *CUSTODY SEAL intact upon pickup*
Metals = Cd, Pb, Zn

Contact Allison Olds eMail aolds@barr.com Phone 573-638-5007 Requested Due Date Standard Billing/PO Per contract with Doe Run

| Lab Use | Sample ID | Sample Date/Time | Preservative | Matrix | pH | TSS | Sulfate | Settleable Solids | T.O.C. | Total Metals | Dissolved Metals | Hardness | | | | |
|---------|-----------|------------------|--------------|--------|---------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 001 | RM-001 | 2/23/12 13:15 | Unpres | 5 | Aqueous | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 002 | RM-Dup | 2/23/12 13:25 | Unpres | 5 | Aqueous | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 003 | RM-DS | 2/23/12 14:00 | Unpres | 5 | Aqueous | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 004 | RM-US | 2/23/12 13:00 | Unpres | 5 | Aqueous | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | Unpres | | Aqueous | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | Unpres | | Aqueous | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | Unpres | | Aqueous | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | Unpres | | Aqueous | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Relinquished By * | Date/Time | Received By | Date/Time |
|----------------------|---------------|---------------------|---------------|
| Chris Schulte / Barr | 15:00 | R. Schmidt | 2/24/12 8:19 |
| R. Schmidt | 2/24/12 09:41 | Elizabeth A. Haring | 2/24/12 09:41 |

* The individual signing this agreement on behalf of client acknowledges that they have read and understand the terms of this agreement and that they have the authority to sign on behalf of client.